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Lophura ignita macartneyi revisited

N. J. COLLAR & R. P. PRYS-JONES

Introduction

The Crested Fireback *Lophura ignita* is a Sundaic forest species with populations in Peninsular Malaysia, Sumatra and Borneo. The usual taxonomic treatment in recent checklists (Dickinson 2003, Clements 2007), monographs (Delacour 1951, 1977, Johnsgard 1999, McGowan 1994, Madge & McGowan 2002, Hennache & Ottaviani 2005), regional avifaunas (van Marle & Voous 1988, Mann 2008) and the international Red List (BirdLife International 2001) has been to accept the existence of four subspecies: *L. i. rufa* (Raffles, 1822) in the Thai-Malay Peninsula and most of Sumatra except the far south-east; *L. i. macartneyi* (Temminck, 1813) in the far south-east of Sumatra; *L. i. ignita* (Shaw, 1798—for the date of which see Dickinson *et al.* 2006) on the Sumatran island of Bangka and in Borneo except the north; and *L. i. nobilis* (P. L. Sclater, 1863) in northern Borneo.

Of these subspecies, *nobilis* is clearly only slightly different from *ignita*, such that Mann (2008) was unable to provide an indication of where they replace each other, while *macartneyi* shows characters that suggest it to be 'intermediate between *ignita* and *rufa*' (Delacour 1951, 1977). However, such are the differences between *ignita* and *rufa* that it has been proposed they be reinstated (following, e.g., Kloss 1931, Peters 1934, Beebe 1936, Ghigi 1968) as separate species: male *rufa*, compared to ('*vs*') male *ignita*, has (1) dark blue belly (continuous with breast) with fine white flank-streaks *vs* a chestnut belly and flanks, (2) white *vs* buffy-rufous central tail feathers, and (3) red *vs* greenish-white legs (del Hoyo & Collar 2014), plus (4) red-tinged blue *vs* all-blue lobes on the face-wattles *fide* Delacour (1949, 1951), although not evident in internet photographs; the female differs by its (5) rich rufous *vs* blackish wings and tail (del Hoyo & Collar 2014).

This arrangement, however, hinges on a clearer understanding of the status of *macartneyi*. An illustration (McGowan 1994) suggests that this is itself a highly distinctive taxon, although the accompanying text reveals a far less clear-cut situation: 'race *macartneyi* very variable, with several apparently co-existing colour morphs described, based mainly on amount of rufous on plumage' (McGowan 1994). In spite of this and other passing comments in the recent literature concerning the variability of *macartneyi* (e.g. van Marle & Voous 1987, Hennache & Ottaviani 2005), its validity as a taxon—it was omitted entirely in Peters (1934)—has not been critically examined or challenged.

The reasons for this can be traced to the comprehensive review of *macartneyi*—building on the work of Büttikofer (1895)—provided by Delacour (1949). This study made some crucial clarifications and advances in the taxonomy of *Lophura ignita* and *L. rufa*, covering the history of the 'many names' (*macartneyi*, *sumatrana*, *delacouri* and *albipennis*) for Sumatran birds associated with these taxa and, through careful analysis of descriptions, pinning those names to particular museum specimens. In documenting eight male study skins at the Rijksmuseum van Natuurlijke Historie (now Naturalis) at Leiden, Netherlands, Delacour (1949) developed the view that the considerations of previous authors (Ghigi 1926, Kloss 1931, Beebe 1936) were 'based on the conception that *ignita*... and *rufa* are two different species' and that 'a more modern idea of systematics' is rather that 'the Crested Firebacks constitute but one species with four subspecies (*ignita*, *nobilis*, *macartneyi*, *rufa*), *macartneyi* serving as a link and a transition'. He therefore preferred 'to consider *macartneyi* as a subspecies inhabiting the south-eastern part of [Sumatra], that is variable in colour and still in the course of evolution'.

In further pursuit of this interpretation, two years later Delacour (1951) accounted for the various names and appearances of birds in south-east Sumatra by calling them 'phases' (the term 'morph' was only coined four years later: Huxley 1955). The 'phase to which the type [specimen 1 in Table 1] belongs' (i.e. the form *macartneyi*) has buff central rectrices and is either (a) like *ignita* (dark blue breast, rufous belly) but heavier in shape and with generally paler rufous colours or (b) with breast and belly dark blue and flanks with rufous patches. The phase *delacouri* 'has plain rufous sides but the central rectrices are mostly white'. The phase *sumatrana* has the belly dark blue, rufous or mixed, flank feathers black-based and rufous-tipped, the rufous varying in size and tone and with or without a black border, and central rectrices white, sometimes washed buff usually near the base and with variable amounts of black. The phase *albipennis* replaces the rufous of the flank markings of blue-bellied birds with white. Delacour (1951) judged that the first three phases co-occur, while the fourth is found close to the range of and is 'intermediate' with *rufa*.

A still more modern idea of systematics would, surely, reject the notion that a subspecies can be based on a population which is so variable that it divides into four phases, two of which themselves consist of seemingly almost infinite permutations. Every living taxon is inevitably 'in the course of evolution', but the notion that evidence of this can be provided by such an array of plumage variation is not normally one that finds any modern expression. What, then, is *Lophura ignita macartneyi*?

Methods and results

NJC examined 12 specimens of male birds catalogued as *L. i. macartneyi* at Naturalis, Leiden, Netherlands (ten) and the Natural History Museum, Tring, UK (two). Clearly from the writings of Ghigi (1926) there are or were many more specimens in Italian museums, but the Leiden-cum-Tring material provides a slightly larger sample than that used by Delacour (1949). Each specimen was tabulated for colour of belly, pattern of flanks and colour of tail. Details of the identity and provenance (where known) of the specimens are given in Table 1; results are shown in Table 2. It is a weakness inherent in the situation that as few as four of the specimens in question (2, 3, 7 and 11) have certain origins in the wild.

Discussion

No two specimens of the 12 examined showed a matching pattern of colouration (Table 2). This is completely contrary to what one might expect in any series of a population from within a circumscribed geographical area. Overall, this variation is so marked that the explanation already furnished by Elliot (1878), Beebe (1921) and Kloss (1931)—and mentioned more tentatively by Büttikofer (1895), van Marle & Voous (1987), Madge & McGowan (2002) and Hennache & Ottaviani (2005)—appears compelling: as hinted at almost 20 years ago by Davison (1996), these birds, each with a different phenotypic character combination, represent a hybrid swarm between *rufa* and *ignita*. Thus while the only known extant syntype of *macartneyi* (specimen 1 in Tables 1 and 2) possesses the belly of *rufa* and the tail of *ignita*, thereby appearing evenly balanced in its intermediacy, most of the other material examined suggests mainly *rufa* in showing a dark belly and white tail, but with varying degrees of rufous in the flanks, betraying the influence of *ignita*. Indeed, the instability and indefinability of *macartneyi* only lends support to the view that *L. rufa* and *L. ignita* are separate species. The variability of specimens mirrors (but exceeds) that found in Imperial Pheasant *Lophura imperialis*, which was recently shown to be of hybrid origin (Hennache *et al.* 2003); and just as *L. imperialis* thereby forfeited its taxonomic status, so too must *L. ignita macartneyi*. The recent discovery that the supposed highly variable Silver Pheasant subspecies *L. nycthemera rufipes* in fact represents a hybrid population of *L. n. nycthemera* and Kalij Pheasant *L. leucomelanos* (Dong *et al.* 2013) provides a further parallel.

Beebe (1921: 125) and Kloss (1931: 305), evidently independently, noted that there is some small variation within both *rufa* and *ignita*. Beebe (1921) mentioned that the more buffy or rufous tips to the white flank stripes of *rufa* on Sumatra are matched by 'over fifty per cent of the Malayan birds' (and it may well be that specimen 11 in Tables 1 and 2 is a normal *rufa* in this regard, although at the time of writing it is preserved in a tray reserved for *macartneyi*). Kloss (1931) referred confidently to 'individual variation and variation due to age' in both *rufa* and *ignita*, and thought that these factors, when the two taxa cross, would add to the illusion of 'the existence of several forms'.

Very recently, the 'Arbeitsgruppe Feuerrückenfasane' (2011) has sought, using colour photographs, to document these variations and hybrid forms of fireback, but could still only conclude, without presenting evidence or argument, that *macartneyi* is 'probably' a hybrid. Senior European aviculturists, however, have long had no doubts on the matter. Alain Hennache (*in litt.* 2013) reports that among living captive specimens he 'never saw one looking like the other' and is convinced of their hybrid origin. Ludo Pinceel (*in litt.* 2013) and Heiner Jacken (*in litt.* 2013) concur, the latter reporting that 'Today many breeders try to "stabilise" the *macartneyi* form by pairing continuously *macartneyi* to each other, thus creating a new "species" called "Delacour's Fireback"'.

Ironically the problem of *macartneyi* may be resolved in a more direct manner. Temminck's (1813) original description was based on more than 20 specimens ('plus de vingt individus'), at least one of which apparently survives (specimen 1 in Table 1), but these represented a variety of forms, crucially including *Lophura ignita*

Table 1. Details of museum data associated with 12 specimens described in Table 2.

No.	Type	Identity
1	Mount	RMNH.AVES.87398, syntype of *macartneyi* (see van den Hoek Ostende *et al.* 1997)
2	Skin	RMNH.AVES.171365, '*sumatrana* Cat.1', collector Vorderman, received 6.3.1896
3	Skin	RMNH.AVES.171364, '*sumatrana* Cat.2', Telok Betong, from Schlüter
4	Skin	ZMA.AVES.25751, from Zoo Artis
5	Skin	ZMA.AVES.25743, label referring to Büttikofer (1895); not clear if seen by Büttikofer
6	Skin	ZMA.AVES.25752, '*albipennis* × *sumatrana*' from Zoo Artis, 1931
7	Mount	RMNH.AVES.171361, '*Lophura sumatrana* Cat.3', Komering, Palembang, E Sumatra, 1883, Schuylenburch
8	Mount	RMNH.AVES.171362, *Lophura sumatrana* Cat.4, from W. J. M. de Bas on 6.4.1921
9	Mount	RMNH.AVES.171366, '*Lophura macartneyi* Cat.1' (pencilled on base)
10	Mount	ZMA.AVES.56799, '*Lophura macartneyi*', from Zoo Artis, before 1880
11	Skin	NHMUK 1880.1.1.1800, Sumatra (Raffles Collection)
12	Skin	NHMUK 1838.10.29.46, 'China', presented by J. R. Reeves

Table 2. Colour pattern of 12 specimens of male *Lophura ignita macartneyi* in Naturalis, Leiden (register abbreviation RMNH and ZMA), and NHM (register abbreviation NHMUK), Tring. Numbers in left column coincide with numbers in Table 1.

No.	Belly	Flanks	Tail
1	Glossy dark blue	White, with uneven pale rufous internal stains and black bases, tips rounded	Rufous-buff
2	Matt black, whitish between legs	Rufous, with black bases, white shafts and tips rounded	White
3	Glossy dark blue shading to matt black	White, with variably rufous broad rounded tips	White
4	Matt black with partial rufous band	Rufous with some black feathers, tips rounded	White
5	Matt black with weak partial rufous band	Rufous and black, tips rounded	Part white, part pale buff
6	Matt black	Pale rufous, bases white, tips rounded	White
7	Glossy dark blue	Rufous with some black feathers, tips pointed	White
8	Glossy dark blue shading to matt black	Plain rufous, partly spreading onto belly, tips rounded	Pale rufous-buff
9	Glossy dark blue shading to matt black with partial rufous band	Plain rufous, partly spreading onto belly, tips rounded	White
10	Glossy dark blue	White with broad rounded tips, lower feathers with some rufous-buff edges	White
11	Glossy dark blue shading to matt black	White anterior shading to rufous posterior, tips pointed	Dirty white, buff stains
12	Centrally black with rufous tips, laterally rufous	Rufous continuous with lateral belly, anterior with white tips and some black fringes, rounded	White

itself. At the beginning of his account Temminck wrote (our translation):

> This beautiful gallinaceous species of which we have only brief descriptions was reported in the first case by George Staunton based on an individual which was offered to Lord Macartney, the British ambassador to the Emperor of China, during his stay in Batavia. It is because I cannot find the name which the Sumatrans call this species that I give it the name of the famous ambassador to whom we owe the first details of this magnificent bird.

From this it seems evident that Temminck was only aware of Staunton's (1797) quotation of a description by Shaw (without an associated name) of Macartney's bird, but not of Shaw's (1798) independently published description and name (*ignita*). Consequently Temminck's account, which also includes a brief description of a variety that is identifiably *L. rufa*, represents a composite of taxa and forms. We also incidentally confirm that, from the plate accompanying Shaw (1798), it is apparent that Shaw's account refers unambiguously to Bornean birds (the plate shows a male with blackish maculations on its rufous flanks, which are certainly present in some Bornean specimens, e.g. N43292 in Staatliches Naturhistorisches Museum Braunschweig and 'nr.16' in Zoologisches Museum Berlin).

If the issue of *macartneyi* and its various other manifestations (*sumatrana*, *delacouri* and *albipennis*) can now be considered resolved—it might be appropriate to refer to these hybrids collectively under the established name '*macartneyi*', so long as this is in inverted commas to indicate its taxonomic invalidity—the puzzle remains how the two firebacks, *rufa* and *ignita*, came into contact in south-east Sumatra. Although Sumatra and Borneo share a common Sundaic biogeography and were most recently separated only some 10,000–12,000 years ago (Mann 2008), the faunal differences between them have been shaped by much older periods of independence (Hall 2009). A well-developed form such as *ignita* on Borneo would hardly be expected to occur naturally on Sumatra if another distinctive but closely related form was already present. Intriguingly, on Bangka, a large island lying close to the north-east coast of southern Sumatra, it is Bornean *ignita* that occurs, in a pure form (Mees 1986). Beebe (1921: 131–132) suggested that this population was introduced to the island by travellers from Borneo, and then to adjacent Sumatra by further human agency or even 'a stray bird finding its way' there; he adduced the absence of any *Lophura* from the island of Belitung (Billiton), east of Bangka, in support of this hypothesis (although given Belitung's much flatter land surface it may have been more heavily cultivated, leading to the local extinction of any *Lophura* population).

On the other hand, Wallace (1864) suggested that Bangka was isolated from Sumatra and Borneo before the two large islands separated from each other; if so, its fauna might be expected to contain elements of both. Mees (1986: 7) implied a different scenario when mentioning that,

> in spite of the proximity of Bangka to Sumatra, the distance separating the mountains or hills of Bangka from the higher ground of Sumatra, is actually greater than the distance separating them from the higher ground of Billiton, or even than the distance separating the latter from the hilly country of south-western Borneo. This may explain the presence of several Bornean subspecies on Bangka.

These Bornean subspecies are seven in total (Mees 1986: 18) and it is notable that the native mammals of Bangka show 'a *greater* affinity' (our emphasis) to Borneo than to Sumatra (Whitten *et al.* 1987). Presumably either *ignita* naturally penetrated further than the other taxa into what is now south-east Sumatra or it was taken there by human hand, perhaps after native populations of *rufa* had been depleted by exploitation. The fact that no pure phenotypes of either *rufa* or *ignita* have been reported from within the area defined by Delacour (1949) for '*macartneyi*' (roughly Sumatra within a 200 km radius of Palembang) suggests that introgression has been fairly long term; but whether the hybrid swarm is spreading in the region will presumably be very difficult to establish given the habitat loss and human exploitation of the birds that are presumably now extensive in the region. More generally, the effect of geological evolution on the biogeography of Bangka and adjacent landmasses clearly deserves much closer study.

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Observations of waterbirds on migration along two rivers in northern China during August 2010

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Introduction

The East Asian–Australasian Flyway (EAAF) is a huge region with little information on the status of its waterbirds, despite holding significant wader populations (Amano *et al.* 2010). The number of people in this region amounts to over 45% of the global population and it is changing very quickly because of its rapidly growing economies. Over 80% of the wetlands in East and South-East Asia are now classified as threatened, with over half of them under serious threat (International Wader Study Group 2003). Our knowledge of the flyway and the important places for migratory waders in China is limited to coastal zones, estuaries and river deltas (Wilson & Barter 1998, Ge *et al.* 2006, Zou *et al.* 2006, Jing *et al.* 2007). However, river valleys also serve as migration corridors for many bird species, especially waterbirds (Berthold 2001). The most important habitats for concentrating migrating waterbirds are natural riverbeds (Shields *et al.* 2000, Platteeuw *et al.* 2010) where they can find attractive places to rest and feed, such as sandy islands, sandbanks and muddy banks. Both the Huang He and Sungari rivers in northern China (Figure 1) have such habitats.

To date, published papers have described only rudimentary information about autumn migration in this area (e.g. Pronkevich 1998, He *et al.* 2010). The main goal of our work was a comparison of the avifauna of the two rivers, observed over several days during the peak autumn waterbird migration. Both are within the EAAF and we collected important data about some of the species which use this migration route. It is well known that the Huang He delta is very important for migrating birds, with up to 250,000 shorebirds congregating there during the northward migration period (Zhu *et al.* 2001), and the nearby area of Tanggu, on the coast of the Yellow Sea, is also important for many wader species (Barter *et al.* 2001). However, no data have been published about species composition or the numbers of waterbirds migrating in the middle reaches of the rivers in question. This work therefore makes a contribution to the knowledge of the migration of waterbirds in two regions of China.

In the second half of August 2010, we canoed the middle reaches of the Huang He and Sungari and counted waterbirds on or near them. The courses of the rivers are approximately parallel, with a distance of about 1,600 km between the two sampled stretches (Figure 1). Although the period of observation was short, it occurred during the peak of autumn migration, thereby allowing potentially important insights into the value of the river systems for certain migratory waterbirds in the EAAF.

Study area

Observations of waterbirds on autumn migration were conducted in the middle reaches of the Huang He along a 143 km section between Tongxintang (40.483°N 108.317°E) and Lihu Geducun (40.500°N 109.317°E) in Inner Mongolia. The largest city in the vicinity is Batou, 100 km to the east of Lihu Geducun (Figure 1). In this section, the river flows mainly through agricultural areas, which extend as a narrow strip along the valley where maize and sunflowers are cultivated, but the desert part of the Ordos Upland stretches for 40 km on the south bank. In some places, the desert

Figure 1. Map of the study area, showing the stretches of river covered and their positions in China.